

DOE's Proposed Residential Furnace Standards

March 31, 2022

AMERICAN GAS ASSOCIATION

AMERICAN PUBLIC GAS ASSOCIATION

SPIRE INC.

SPIRE MISSOURI INC.

SPIRE ALABAMA INC.

Our Principal Concerns

- We are concerned that DOE intends to propose new “condensing level” standards (*i.e.*, AFUE >90%) for at least most residential furnaces.
 - Such standards are unjustified and would be problematic for several reasons.
 - Such standards raise serious collateral concerns.
- We are concerned that DOE will not provide sufficient information to facilitate adequate comment on its proposal.
 - Standards are required to be economically justified on the basis of substantial evidence.
 - DOE’s economic justification for similar standards has been extremely complex, inadequately explained, and based on undisclosed information.

Principal Concerns (Cont'd)

- Many of our concerns about this proposal are the same as those raised in our March 7, 2022 meeting concerning DOE's proposed standards for commercial water heaters.
- However, standards for residential furnaces raise additional concerns, particularly with respect to disproportionate adverse impacts on low-income consumers, including:
 - Significant safety issues;
 - Other adverse impacts on health and welfare

The Practical Problem with Condensing-Only Standards

- Most existing buildings were architecturally designed to accommodate atmospherically-vented gas products.
- Condensing products are not compatible with such buildings.
- If standards limit the market to condensing products, existing atmospherically vented products could not be replaced without the need to modify existing buildings to accommodate products for which they were not designed.
- There are many cases in which required modification would be impractical or would have undesirable impacts on occupied space or building exteriors.
- Many consumers would be left without replacement products suitable to their needs.

The Result

- Standards limiting the market to condensing products are designed to promote “fuel switching” rather than cost-effective efficiency improvements.
- There is no ambiguity involved:
 - DOE recognizes that condensing standards would impose burdens that would cause many purchasers to replace gas products with electric alternatives; and
 - Has sought to justify condensing standards on the theory that “fuel switching” is a desirable outcome.

Impacts on Low-Income Consumers

- Problematic furnace replacement scenarios are particularly common in the context of older multi-family and other urban housing.
- Low-income consumers would frequently face high-cost or impractical furnace replacement scenarios, resulting in:
 - A higher frequency of adverse economic outcomes;
 - Increased frequency of maintenance problems and emergency replacements due to deferred furnace replacements;
 - More and longer heat outages due to furnace maintenance issues and replacement challenges.

There are significant safety, health, and environmental justice issues

- Every year, low-income consumers suffer because their furnaces go out and cannot be replaced quickly enough.
- Every year, low-income consumers die as a result of hazards created by improvised furnace repairs and the use of space heating expedients.
- For low-income consumers, adverse *economic impacts* have adverse *health consequences*.
- Condensing-only standards would significantly exacerbate these problems.
- These issues are documented in the record. *See, e.g.*, Document No. EERE-2014-BT-STD-0031-0309 (available at <https://www.regulations.gov/document?D=EERE-2014-BT-STD-0031-0309>) at pp. 39-43.

A “Small Furnace” Exception is No Solution

- DOE previously proposed a “small furnace” exception in response to concerns about the adverse economic impacts condensing-only standards would have on low-income consumers.
- That “solution” was too narrow in scope (many scenarios do not involve “small furnaces”) and would leave many consumers without adequate heating.
- These issues are documented in the record (see, e.g., Document No. EERE-2014-BT-STD-0031-0309 (available at <https://www.regulations.gov/document?D=EERE-2014-BT-STD-0031-0309>) at pp. 43-48.

Condensing standards would be problematic for additional reasons

- Condensing standards are precluded by specific statutory provisions designed to ensure that standards do not leave purchasers without products suitable to their needs.
- There is no evidence that there are any market failures warranting regulatory intervention.
- There is no evidence that new standards would be economically beneficial for consumers.
- Standards designed to promote fuel switching are inconsistent with the basic statutory scheme.

Condensing standards are inconsistent with EPCA's “Unavailability” provisions

- EPCA precludes standards that would result in the unavailability “in any covered product type (or class) of performance characteristics (including reliability), features, sizes, capacities, and volumes” that are currently available to consumers. 40 C.F.R. §§ 6295(o)(4); 6313(a)(6)(B)(iii)(II)(aa).
- These “Unavailability” provisions were designed to ensure that even economically justifiable standards achieve energy savings “without sacrificing the utility or convenience of appliances to consumers.” H.R. Rep. No. 100-11 at 22-23 (1987).
- Among other things, these provisions were specifically intended to preserve the availability of products that “fit in standard building spaces” in existing buildings. H.R. Rep. No. 100-11 at 22-23 (1987).

There is no evidence of market failures justifying regulatory intervention

- Condensing furnaces are already capturing an increasing share of the furnace market (and already dominate the market in colder regions where the economic justification for them is strongest).
- The economics of investments in such products is highly variable, resulting in significant net benefits in some cases and significant net costs in others.
- Regional differences in the market share for condensing furnaces demonstrate that purchasers have a strong tendency to make economically beneficial investments in condensing furnaces and to decline investments that are economically unattractive.
- There is no evidence that the investments in condensing furnaces that purchasers are declining would produce net economic benefits.

DOE's failure to consider baseline purchasing behavior is a serious error

- The National Academies of Science report criticized DOE's failure to identify market failures justifying new standards <http://nap.edu/25992> (at 3, 21-22).
- DOE's failure to provide evidence of relevant market failures was also an error identified by the D.C. Circuit in *APGA v. DOE*. [20-1068-1930930.pdf \(uscourts.gov\)](https://www.uscourts.gov/20-1068-1930930.pdf) (Slip Op. at 13-15).
- That failure completely invalidates the lifecycle cost analysis DOE relies upon in its economic justification for efficiency standards.

DOE's lifecycle cost analysis is invalid

- DOE's analysis considers the range of economic outcomes resulting from efficiency investments ostensibly resulting from a new standard, but it “assigns” investments (and their economic outcomes) to the base case randomly, as though purchasers *never* consider the economics of potential efficiency investments *regardless of the economic stakes involved*.
- This approach:
 - Grossly overstates the frequency of high-benefit outcomes – and understates the frequency net cost outcomes – in the investments that would occur as a result of new standards; and thus
 - Dramatically overstates the potential for standards to provide economic benefits for consumers.

DOE's "fuel switching" analysis compounds the problem

- DOE recognizes that the incompatibility of condensing furnaces with existing buildings would cause consumers to switch to electric alternatives.
- Having assumed that decisions to invest in more efficient gas products are *never* influenced by economics, DOE assumes that decisions to switch to electric alternatives *always* are, and uses a "fuel switching" analysis to:
 - Selectively exclude economically unattractive efficiency investments from its analysis; and
 - Replace those economic outcomes with "beneficial" economic outcomes attributed to assumed investments in electric alternatives.
- Rather than showing that *required efficiency improvements* would be justified by the energy savings those improvements would provide, this analysis seeks to show that *standards requiring economically unjustified efficiency improvements* would have economically justifiable consequences.

This regulatory approach is inconsistent with the basic statutory scheme

- The statutory purpose of EPCA’s appliance and equipment efficiency program is to conserve energy through *improvements in the efficiency of the regulated products*, not to promote electrification. 42 U.S.C. § 6201.
- Standards must be economically justified based on the costs and benefits of efficiency improvements *in the products subject to the standards*.
 - EPCA requires that *standards* be economically justified. 42 U.S.C. § 6295(o)(2)(B)(i).
 - By energy savings resulting “directly” from the standard. 42 U.S.C. § 6295(o)(2)(B)(i)(III).
 - DOE must consider the economic impact of the standard on manufacturers and consumers “of the products subject to such standard.” 42 U.S.C. § 6295(o)(2)(B)(i)(I).
 - DOE must compare the increase in the initial cost of more efficient products subject to the standards with the operating cost savings those more efficient products would provide over the life of those products. 42 U.S.C. § 6295(o)(2)(B)(i)(II).

Transparency Issues –Individual Lifecycle Cost (LCC) Outcomes

- The average LCC outcome (on which DOE primarily relies) is heavily influenced by a relatively small percentage of extreme individual LCC outcomes: the kinds of economic outcomes that are most likely to influence baseline purchasing behavior.
- However, DOE provides limited information on the range and distribution of individual LCC outcomes, particularly at the outcome-determinative ends of the range of economic outcomes.
- To provide a sufficient understanding of its analysis to facilitate comment, **DOE must disclose the magnitude and distribution of the most economically beneficial and highest net-cost individual LCC outcomes in both its base case and rule outcome cases.**

Accounting for windfall “benefits” *where no efficiency investment is required*

- DOE must provide sufficient information to confirm that its analysis does not claim regulatory benefits from installations in which standards compliant products have *lower initial costs* than less efficient alternatives (as commonly occurs in installations in new construction).
 - In such cases, the basic premise of efficiency regulation (that higher initial costs might deter efficiency investments that would provide net economic benefits over time) does not even apply.
 - Yet DOE’s “random assignment” methodology fails to assign such outcomes to the base case for analysis.
 - As a result, over 55% of the purported regulatory benefits claimed to justify DOE’s 2016 proposed residential furnace standards were generated by such outcomes.

Accounting for high net-benefit outcomes requiring at least some initial investment

- To permit an adequate understanding of the nature and impact of its assumptions with regard to baseline purchasing behavior, DOE must adequately disclose:
 - The magnitude and distribution of the highest net benefit LCC outcomes in both the base case and rule outcome cases; and
 - The justification for that distribution of outcomes.
- At a minimum, DOE must disclose:
 - The magnitude and distribution of the 10% of individual LCC outcomes with the highest net LCC benefits; and
 - The magnitude and distribution of individual LCC outcomes for which the simple payback period would not exceed one year.

Accounting for high net-cost efficiency improvements

- To permit an adequate understanding of the nature and impact of its assumptions with regard to baseline purchasing behavior, DOE must adequately disclose:
 - The magnitude and distribution of the highest individual *net cost LCC outcomes* in both the base case and rule outcome cases; and
 - The justification for that distribution of outcomes.
- At a minimum, DOE must disclose the magnitude and distribution of the 10% of individual LCC outcomes with the highest net LCC costs.

Accounting for any “fuel switching” impacts on DOE’s LCC analysis

- To permit an understanding of the impact of any “fuel switching” assumptions on its LCC analysis, DOE must disclose: both:
 - The economic outcomes of any investments in condensing furnaces that DOE assumes would not occur as a result of fuel switching; and
 - The economic outcomes of any investments in alternative products that are included in its analysis on the assumption that fuel switching would occur.
- If DOE includes fuel switching in its LCC analysis, it should also separately provide the results of an LCC analysis in which no fuel switching is assumed to occur.

Specific Transparency Issues – Marginal Prices for Natural Gas

- What are the prices used to calculate the utility bill savings efficiency improvements would provide?
- Spire determined the average marginal residential and commercial prices customers pay in Missouri, but DOE:
 - Ignored that information; and
 - Did not disclose its own numbers in a way that permits comparison.
- DOE must clearly disclose the range and average of the prices its analysis used to calculate utility bill savings in each state.

Specific Transparency Issues – Installed Costs for Residential Furnaces

- What do purchasers pay (purchase price plus installation) for baseline and standards-compliant residential furnaces?
- Interested parties have access to actual price data, but DOE does not disclose its own numbers in a way that facilitates comparison.
- DOE must clearly disclose the range and average of the purchase prices and installation costs its analysis used in each state.

Conclusions

- Condensing level standards for gas furnaces are inherently problematic.
 - There are serious safety and environmental justice concerns.
 - Such standards would violate the “Unavailability” provisions of the statute and would be inconsistent with the statutory scheme.
 - They cannot be justified by a proper lifecycle cost analysis.
- At a minimum, any proposed standards must provide sufficient information to facilitate meaningful comment on core issues on which the results of DOE’s economic analysis depend.